

## IN THE CLAIMS

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1. (Currently Amended) A method of decoding a one-point algebraic geometric code of dimension  $k$  and length  $n$ , ~~in which~~ wherein, in order to identify ~~[[the]]~~ a position of ~~[[the]]~~ errors in a received word, ~~[[the]]~~ a syndromes matrix  $S$ , of size  $(n - k) \times (n - k)$ , is defined, of which ~~[[the]]~~ elements  $S_{ij}$  of each line  $I$  are calculated, for  $j$  between 1 and  $w(I)$ , wherein ~~[[the]]~~ boundary  $w$  is a decreasing function, using ~~[[the]]~~ syndrome  $s$  of the received word,

said method ~~being characterized in that it comprises~~ comprising matrix construction steps numbered by  $u$ , during which matrices  $S^u$  are constructed starting with  $S^1 = S$ , and ~~in that~~ wherein each matrix  $S^u$  for  $u > 1$  is obtained from ~~[[the]]~~ matrix  $S^{u-1}$  by performing:

~~[[ - ]]~~ where appropriate, permutations on ~~[[the]]~~ columns of the matrix  $S^{u-1}$ , then

~~[[ - ]]~~ linear manipulations involving ~~[[the]]~~ a line of index  $u$  of the matrix so obtained,

and ~~in that~~ wherein the construction of matrices terminates when:

~~[[ - ]]~~ either  $S^u_{uj} = 0$  for all  $j$  between 1 and  $w(u)$ ,

~~[[ - ]]~~ or there is an integer  $u^* \leq (u-1)$  such that  $S^{u^*}_{u^*j} = 0$  for all  $j$

between 1 and  $w(u)$ .

2. (Currently Amended) A method of decoding a one-point algebraic geometric code of dimension  $k$  and length  $n$ , ~~in which~~ wherein, in order to identify ~~[[the]]~~ a position of ~~[[the]]~~ errors in a received word, ~~[[the]]~~ a syndromes matrix  $S$ , of size  $(n - k) \times (n - k)$ , is defined, of which ~~[[the]]~~ elements  $S_{ij}$  of each line  $i$  are calculated, for  $j$  between 1 and  $w(i)$ , wherein ~~[[the]]~~ boundary  $w$  is a decreasing function, using ~~[[the]]~~ syndrome  $s$  of the received word,

said method ~~being characterized in that it comprises~~ comprising matrix construction steps numbered by  $u$ , during which matrices  $S^u$  are constructed starting with  $S^1 = S$ , and ~~in that~~ wherein each matrix  $S^u$  for  $u > 1$  is obtained from ~~[[the]]~~ matrix  $S^{u-1}$  by performing:

~~[[ - ]]~~ where appropriate, permutations on ~~[[the]]~~ columns of the matrix  $S^{u-1}$ , then

~~[[ - ]]~~ linear manipulations of ~~[[the]]~~ a line of index  $u$  of the matrix so obtained, and ~~in that~~ wherein the last step is:

~~[[ - ]]~~ either the step of number  $u = \lambda$ , if an integer  $\lambda$  is determined such that  $S^\lambda_{\lambda j} = 0$  for all  $j$  between 1 and  $w(\lambda)$ ,

~~[[ - ]]~~ or the step of number  $u = (\lambda - 1)$ , if an integer  $\lambda$  and an integer  $u^*$  are determined, with  $u^* < \lambda$ , such that  $S^{u^*}_{u^* j} = 0$  for all  $j$  between 1 and  $w(\lambda)$ .

3. (Currently Amended) A decoding method according to ~~claim 1 or claim 2~~ Claims 1 or 2, ~~characterized in that the~~ which a number of lines of each matrix  $S^u$  is cut off at  $U_{\max}$ , wherein  $U_{\max}$  is ~~[[the]]~~ a smallest integer  $i$  for which  $w(i)$  is less than  $i$ .

4. (Currently Amended) A decoding method according to Claims 1 or 2, characterized in that the which a number of columns of each matrix  $S^u$  is cut off at  $w(u)$ .

5. (Currently Amended) A decoding method according to Claims 1 or 2, characterized in that the which a number of columns of each matrix  $S^u$  is cut off at  $w(\mu_D)$  for  $u$  between 1 and Duursma's minimum  $\mu_D$ , and at  $w(u)$  for ~~(the case arising)~~  $u$  greater than  $\mu_D$ .

6. (Currently Amended) An error correction device ~~(107)~~ for decoding a one-point algebraic geometric code of dimension  $k$  and length  $n$ , adapted to identify ~~[[the]]~~ a position of ~~[[the]]~~ errors in a received word, and comprising means for defining ~~[[the]]~~ a syndromes matrix  $S$ , of size  $(n - k) \times (n - k)$ , of which ~~[[the]]~~ elements  $S_{ij}$  of each line  $i$  are calculated, for  $j$  between 1 and  $w(i)$ , wherein ~~[[the]]~~ boundary  $w$  is a decreasing function, using ~~[[the]]~~ syndrome  $s$  of the received word,

said error correction device ~~(107) being characterized in that it~~ further ~~comprises~~ comprising means for constructing matrices  $S^u$  numbered by  $u$ , with  $S^1 = S$ , each matrix  $S^u$  for  $u > 1$  being obtained from ~~[[the]]~~ matrix  $S^{u-1}$  by performing:

~~[[ - ]]~~ where appropriate, permutations on ~~[[the]]~~ columns of the matrix  $S^{u-1}$ , then

~~[[ - ]]~~ linear manipulations involving ~~[[the]]~~ a line of index  $u$  of the matrix so obtained,

and ~~in that it comprises~~ comprising means for stopping the construction of the matrices when:

[[ - ]] either  $S''_{uj} = 0$  for all  $j$  between 1 and  $w(u)$ ,

[[ - ]] or there is an integer  $u^* \leq (u-1)$  such that  $S''_{u^*j} = 0$  for all  $j$  between 1 and  $w(u)$ .

7. (Currently Amended) An error correction device according to ~~claim~~ Claim 6, ~~characterized in that it further comprises~~ comprising means for cutting off [[the]] a number of lines of each matrix  $S''$  at  $U_{\max}$ , wherein  $U_{\max}$  is [[the]] a smallest integer  $i$  for which  $w(i)$  is less than  $i$ .

8. (Currently Amended) An error correction device according to ~~claim~~ Claims 6 or ~~claim~~ 7, ~~characterized in that it further comprises~~ comprising means for cutting off [[the]] a number of columns of each matrix  $S''$  at  $w(u)$ .

9. (Currently Amended) An error correction device according to ~~claim~~ Claims 6 or ~~claim~~ 7, ~~characterized in that it further comprises~~ comprising means for cutting off [[the]] a number of columns of each matrix  $S''$  at  $w(\mu_D)$  for  $u$  between 1 and Duursma's minimum  $\mu_D$ , and at  $w(u)$  for ~~(the case arising)~~  $u$  greater than  $\mu_D$ .

10. (Currently Amended) A decoder (10), ~~characterized in that it comprises~~ comprising:

[[ - ]] at least one error correction device according to Claims 6 or 7,  
and

[[ - ]] at least one redundancy suppression device (108).

11. (Currently Amended) Apparatus for receiving encoded digital signals (70), characterized in that it comprises comprising a decoder according to ~~claim~~ Claim 10, and in that it comprises means (106) for demodulating [[said]] the encoded digital signals.

12. (Currently Amended) A computer system (70), characterized in that it comprises comprising a decoder according to ~~claim~~ Claim 10, and in that it further comprises comprising:

[[ - ]] at least one hard disk, and

[[ - ]] at least one means (105) for reading ~~that~~ said hard disk.

13. (Currently Amended) Non-removable data storage means, characterized in that it comprises comprising computer program code instructions for the execution of the steps of a method according to Claims 1 or 2.

14. (Currently Amended) Partially or wholly removable data storage means, characterized in that it comprises comprising computer program code instructions for the execution of the steps of a method according to Claims 1 or 2.

15. (Currently Amended) Computer program, ~~characterized in that it contains~~ containing instructions such that, when said program controls a programmable data processing device, said instructions lead to said data processing device implementing a method according to Claims 1 or 2.